



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

JOAN T. ODELL ET AL.

CASE NO.: BB1095

APPLICATION NO.: 09/462,972

GROUP ART UNIT: UNKNOWN

I.A. FILING DATE: 7 JULY 1998

EXAMINER: UNKNOWN

FOR: PLANT SUG1 HOMOLOGS

**STATEMENT UNDER 37 CFR 1.821(g) and 1.825(b)**

Commissioner for Patents  
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Arlington, VA 22202

**Attention: Kaya L Lewis Baltimore**

The submission of the substitute Sequence Listing filed concurrently herewith does not include new matter.

The copy of the substitute Sequence Listing in computer readable form filed concurrently herewith is the same as the paper copy of the substitute Sequence Listing filed concurrently herewith.

Respectfully submitted,

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Registration No. 41,881  
Telephone: 302-992-4929  
Facsimile: 302-892-1026

Dated: 20 December 2002



## SEQUENCE LISTING

<110> E. I. DUPONT DE NEMOURS AND COMPANY  
Odell, Joan T  
Allen, Stephen M

<120> PLANT SUG1 HOMOLOGS

<130> BB-1095-A

<140> US 09/462,972

<141> 2000-01-14

<150> PCT/US98/13992

<151> 1998-07-07

<150> US 08/893,401

<151> 1997-07-11

<160> 14

<170> PatentIn version 3.1

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20 25 30

cac tac tat tct ctc aac atc cac gag cat cag ctc ctt ctt cgc caa 144  
His Tyr Tyr Ser Leu Asn Ile His Glu His Gln Leu Leu Leu Arg Gln  
35 40 45

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Lys Thr His Asn Leu Asn Arg Leu Glu Ala Gln Arg Asn Asp Leu Asn  
50 55 60

tct agg gtg agg atg ctg cgc gaa gaa tta cag ctt ctg cag gaa ccc 240  
Ser Arg Val Arg Met Leu Arg Glu Glu Leu Gln Leu Leu Gln Glu Pro  
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Gly Ser Tyr Val Gly Glu Val Val Lys Val Met Gly Lys Asn Lys Val  
85 90 95

ctt gtc aag gtc cac cca gaa gga aaa tat gtt gtt gac att gac aaa Leu Val Lys Val His Pro Glu Gly Lys Tyr Val Val Asp Ile Asp Lys 100 105 110	336
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ctc aac cag ttg gat gga ttt gaa gct tca aat aag atc aag gtt ttg Leu Asn Gln Leu Asp Gly Phe Glu Ala Ser Asn Lys Ile Lys Val Leu 290 295 300	912
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 385 390 395 400  
 aag gtg atg aaa aag gag act gaa aaa aac atg tca ttg cgg aag ttg 1248  
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Lys Thr His Asn Leu Asn Arg' Leu Glu Ala Gln Arg Asn Asp Leu Asn  
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Ser Arg Val Arg Met Leu Arg Glu Glu Leu Gln Leu Leu Gln Glu Pro  
 65 70 75 80

Gly Ser Tyr Val Gly Glu Val Val Lys Val Met Gly Lys Asn Lys Val  
 85 90 95

Leu Val Lys Val His Pro Glu Gly Lys Tyr Val Val Asp Ile Asp Lys  
 100 105 110

Asn Ile Asp Ile Thr Lys Ile Thr Pro Ser Thr Arg Val Ala Leu Arg  
 115 120 125

Asn Asp Ser Tyr Val Leu His Leu Val Leu Pro Ser Lys Val Asp Pro  
 130 135 140

Leu Val Asn Leu Met Lys Val Glu Lys Val Pro Asp Ser Thr Tyr Asp  
 145 150 155 160

Met Ile Gly Gly Leu Asp Gln Gln Ile Lys Glu Ile Lys Glu Val Ile  
 165 170 175

Glu Leu Pro Ile Lys His Pro Glu Leu Phe Glu Ser Leu Gly Ile Ala  
 180 185 190

Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro Gly Thr Gly Lys Thr  
 195 200 205

Leu Leu Ala Arg Ala Val Ala His His Thr Asp Cys Thr Phe Ile Arg  
 210 215 220

Val Ser Gly Ser Glu Leu Val Gln Lys Tyr Ile Gly Glu Gly Ser Arg  
 225 230 235 240

Met Val Arg Glu Leu Phe Val Met Ala Arg Glu His Ala Pro Ser Ile  
 245 250 255

Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser Ala Arg Met Glu Ser  
 260 265 270

Gly Ser Gly Asn Gly Asp Ser Glu Val Gln Arg Thr Met Leu Glu Leu  
 275 280 285

Leu Asn Gln Leu Asp Gly Phe Glu Ala Ser Asn Lys Ile Lys Val Leu  
 290 295 300

Met Ala Thr Asn Arg Ile Asp Ile Leu Asp Gln Ala Leu Leu Arg Pro  
 305 310 315 320

Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Thr Pro Asn Glu Glu Ser  
 325 330 335

Arg Leu Asp Ile Leu Lys Ile His Ser Arg Arg Met Asn Leu Met Arg  
 340 345 350

Gly Ile Asp Leu Lys Lys Ile Ala Glu Lys Met Asn Gly Ala Ser Gly  
 355 360 365

Ala Glu Leu Lys Ala Val Cys Thr Glu Ala Gly Met Phe Ala Leu Arg  
 370 375 380

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 Asn Leu Asn Arg Leu Glu Ala Gln Arg Asn Asp Leu Asn Ser Arg Val  
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 aga atg ctc agg gaa gag ttg cag ttg ctt caa gag cct ggc tca tat 143  
 Arg Met Leu Arg Glu Glu Leu Gln Leu Leu Gln Glu Pro Gly Ser Tyr  
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 Val His Pro Glu Gly Lys Tyr Val Val Asp Ile Asp Lys Ser Ile Asp  
 65 70 75  
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 Ile Thr Lys Ile Thr Pro Ser Thr Arg Val Ala Leu Arg Asn Asp Ser  
 80 85 90 95  
 tat atg ctc cat ctg atc cta cca agc aaa gtt gat cca ttg gtc aat 335  
 Tyr Met Leu His Leu Ile Leu Pro Ser Lys Val Asp Pro Leu Val Asn  
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gac agg aag att gaa ttt cca aat cct aac gag gat tca cgt ttc gat Asp Arg Lys Ile Glu Phe Pro Asn Pro Asn Glu Asp Ser Arg Phe Asp 290 295 300	911
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 35 40 45

Gly Glu Val Val Lys Val Met Gly Lys Ser Lys Val Leu Val Lys Val  
 50 55 60

His Pro Glu Gly Lys Tyr Val Val Asp Ile Asp Lys Ser Ile Asp Ile  
 65 70 75 80

Thr Lys Ile Thr Pro Ser Thr Arg Val Ala Leu Arg Asn Asp Ser Tyr  
 85 90 95

Met Leu His Leu Ile Leu Pro Ser Lys Val Asp Pro Leu Val Asn Leu  
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Met Lys Val Glu Lys Val Pro Asp Ser Thr Tyr Asp Met Ile Gly Gly  
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Leu Asp Gln Gln Ile Lys Glu Ile Lys Glu Val Ile Glu Leu Pro Ile  
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Lys His Pro Glu Leu Phe Glu Ser Leu Gly Ile Ala Gln Pro Lys Gly  
 145 150 155 160

Val Leu Leu Tyr Gly Pro Pro Gly Thr Gly Lys Thr Leu Leu Ala Arg  
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 180 185 190

Glu Leu Val Gln Lys Tyr Ile Gly Glu Gly Ser Arg Met Val Arg Glu  
 195 200 205

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 210 215 220

Glu Ile Asp Ser Ile Gly Ser Ala Arg Met Glu Ser Gly Thr Gly Asn  
 225 230 235 240

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 245 250 255

Asp Gly Phe Glu Ala Ser Asn Lys Ile Lys Val Leu Met Ala Thr Asn  
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 275 280 285

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 305 310 315 320

Lys Lys Ile Ala Glu Lys Met Asn Gly Ala Ser Gly Ala Glu Leu Lys  
 325 330 335

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 atgtggtgga tatagataag agcattgata tctaagat cacaccttca acaagagttg 480  
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 35 40 45

Gln Ile Arg Gln Lys Thr His Asn Leu Asn Arg Leu Glu Ala Gln Arg  
 50 55 60

Asn Asp Leu Asn Ser Arg Val Arg Met Leu Arg Glu Glu Leu Gln Leu  
 65 70 75 80

Leu Gln Glu Pro Gly Ser Tyr Val Gly Glu Val Val Lys Val Met Gly  
 85 90 95

Lys Ser Lys Val Leu Val Lys Val His Pro Glu Gly Lys Tyr Val Val  
 100 105 110

Asp Ile Asp Lys Ser Ile Asp Ile Thr Lys Ile Thr Pro Ser Thr Arg  
 115 120 125

Val Ala Leu Arg Asn Asp Ser Tyr Met Leu His Leu Ile Leu Pro Ser  
 130 135 140

Lys Val Asp Pro Leu Val Asn Leu Met Lys Val Glu Lys Val Pro Asp  
 145 150 155 160

Ser Thr Tyr Asp Met Ile Gly Gly Leu Asp Gln Gln Ile Lys Glu Ile  
 165 170 175

Lys Glu Val Ile Glu Leu Pro Ile Lys His Pro Glu Leu Phe Glu Ser  
 180 185 190

Leu Gly Ile Ala Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro Gly  
 195 200 205

Thr Gly Lys Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp Cys  
 210 215 220

Thr Phe Ile Arg Val Ser Gly Ser Glu Leu Val Gln Lys Tyr Ile Gly  
 225 230 235 240

Glu Gly Ser Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu His  
 245 250 255

Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser Ala  
 260 265 270

Arg Met Glu Ser Gly Thr Gly Asn Gly Asp Ser Glu Val Gln Arg Thr  
 275 280 285

Met Leu Glu Leu Leu Asn Gln Leu Asp Gly Phe Glu Ala Ser Asn Lys  
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Ile Lys Val Leu Met Ala Thr Asn Arg Ile Asp Ile Leu Asp Gln Ala  
 305 310 315 320

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 325 330 335

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Asn Leu Met Arg Gly Ile Asp Leu Lys Lys Ile Ala Glu Lys Met Asn  
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 370 375 380

Phe Ala Leu Arg Glu Arg Arg Val His Val Thr Gln Glu Asp Phe Glu  
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 Asp Lys Lys Lys Val Leu Val Lys Val His Pro Glu Gly Lys Phe Val  
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 Val Asp Val Asp Lys Asn Ile Asp Ile Asn Asp Val Thr Pro Asn Cys  
 100 105 110  
 Arg Val Ala Leu Arg Asn Asp Ser Tyr Thr Leu His Lys Ile Leu Pro  
 115 120 125  
 Asn Lys Val Asp Pro Leu Val Ser Leu Met Met Val Glu Lys Val Pro  
 130 135 140  
 Asp Ser Thr Tyr Glu Met Ile Gly Gly Leu Asp Lys Gln Ile Lys Glu  
 145 150 155 160  
 Ile Lys Glu Val Ile Glu Leu Pro Val Lys His Pro Glu Leu Phe Glu  
 165 170 175  
 Ala Leu Gly Ile Ala Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro  
 180 185 190  
 Gly Thr Gly Lys Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp  
 195 200 205  
 Cys Thr Phe Ile Arg Val Ser Gly Ser Glu Leu Val Gln Lys Phe Ile  
 210 215 220  
 Gly Glu Gly Ala Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu  
 225 230 235 240  
 His Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser  
 245 250 255  
 Ser Arg Leu Glu Gly Gly Ser Gly Gly Asp Ser Glu Val Gln Arg Thr  
 260 265 270

Met Leu Glu Leu Leu Asn Gln Leu Asp Gly Phe Glu Ala Thr Lys Asn  
 275 280 285

Ile Lys Val Ile Met Ala Thr Asn Arg Ile Asp Ile Leu Asp Ser Ala  
 290 295 300

Leu Leu Arg Pro Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Pro Pro  
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 325 330 335

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Gly Ala Ser Gly Ala Glu Val Lys Gly Val Cys Thr Glu Ala Gly Met  
 355 360 365

Tyr Ala Leu Arg Glu Arg Arg Val His Val Thr Gln Glu Asp Phe Glu  
 370 375 380

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85 90 95

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Val Cys Leu Arg Ser Asp Ser Tyr Met Leu His Lys Val Leu Glu Asn  
115 120 125

Lys Ala Asp Pro Leu Val Ser Leu Met Met Val Glu Lys Val Pro Asp  
130 135 140

Ser Thr Tyr Asp Met Val Gly Gly Leu Thr Lys Gln Ile Lys Glu Ile  
145 150 155 160

Lys Glu Val Ile Glu Leu Pro Val Lys His Pro Glu Leu Phe Glu Ser  
165 170 175

Leu Gly Ile Ala Gln Pro Lys Gly Val Ile Leu Tyr Gly Pro Pro Gly  
180 185 190

Thr Gly Lys Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp Cys  
195 200 205

Lys Phe Ile Arg Val Ser Gly Ala Glu Leu Val Gln Lys Tyr Ile Gly  
210 215 220

Glu Gly Ser Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu His  
225 230 235 240

Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser Thr  
245 250 255

Arg Val Glu Gly Ser Gly Gly Gly Asp Ser Glu Val Gln Arg Thr Met  
260 265 270

Leu Glu Leu Leu Asn Gln Leu Asp Gly Phe Glu Thr Ser Lys Asn Ile  
275 280 285

Lys Ile Ile Met Ala Thr Asn Arg Leu Asp Ile Leu Asp Pro Ala Leu  
290 295 300

Leu Arg Pro Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Pro Pro Ser  
 305 310 315 320

Val Ala Ala Arg Ala Glu Ile Leu Arg Ile His Ser Arg Lys Met Asn  
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Leu Thr Arg Gly Ile Asn Leu Arg Lys Val Ala Glu Lys Met Asn Gly  
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Cys Ser Gly Ala Asp Val Lys Gly Val Cys Thr Glu Ala Gly Met Tyr  
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Ala Leu Arg Glu Arg Arg Ile His Val Thr Gln Glu Asp Phe Glu Leu  
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Ala Lys Leu Phe Lys  
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Arg Asn Glu Leu Asn Ala Lys Val Arg Leu Leu Arg Glu Glu Leu Gln  
 50 55 60

Leu Leu Gln Glu Gln Gly Ser Tyr Val Gly Glu Val Val Arg Ala Met  
 65 70 75 80

Asp Lys Lys Lys Val Leu Val Lys Val His Pro Glu Gly Lys Phe Val  
 85 90 95



Val Asp Val Asp Lys Asn Ile Asp Ile Asn Asp Val Thr Pro Asn Cys  
100 105 110

Arg Val Ala Leu Arg Asn Asp Ser Tyr Thr Leu His Lys Ile Leu Pro  
115 120 125

Asn Lys Val Asp Pro Leu Val Ser Leu Met Met Val Glu Lys Val Pro  
130 135 140

Asp Ser Thr Tyr Glu Met Ile Gly Gly Leu Asp Lys Gln Ile Lys Glu  
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Ile Lys Glu Val Ile Glu Leu Pro Val Lys His Pro Glu Leu Phe Glu  
165 170 175

Ala Leu Gly Ile Ala Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro  
180 185 190

Gly Thr Gly Lys Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp  
195 200 205

Cys Thr Phe Ile Arg Val Ser Gly Ser Glu Leu Val Gln Lys Phe Ile  
210 215 220

Gly Glu Gly Ala Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu  
225 230 235 240

His Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser  
245 250 255

Ser Arg Leu Glu Gly Gly Ser Gly Gly Ser Ser Glu Val Gln Arg Gln  
260 265 270

Met Leu Glu Leu Leu Asn Gln Leu Asp Gly Phe Glu Ala Thr Lys Asn  
275 280 285

Ile Lys Val Ile Met Ala Thr Asn Arg Ile Asp Met Leu Asp Ser Ala  
290 295 300

Leu Leu Arg Pro Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Pro Pro  
305 310 315 320

Asn Glu Glu Ala Arg Leu Asp Ile Leu Lys Ile His Ser Arg Lys Met  
325 330 335

Asn Leu Thr Arg Gly Ile Asn Leu Arg Lys Ile Ala Glu Leu Met Pro  
 340 345 350

Gly Ala Ser Gly Ala Glu Val Lys Gly Val Cys Thr Glu Ala Gly Met  
 355 360 365

Tyr Ala Leu Arg Glu Arg Arg Val His Val Thr Gln Glu Asp Phe Glu  
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Met Ala Val Ala Lys Val Met Gln Lys Asp Ser Glu Lys Asn Met Ser  
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Ile Lys Lys Leu Trp Lys  
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Leu Ile Val Asn Asp Lys Ser Gln Asn Leu Arg Arg Leu Gln Ala Gln  
 35 40 45

Arg Asn Glu Leu Asn Ala Lys Val Arg Leu Leu Arg Arg Glu Leu Gln  
 50 55 60

Leu Leu Gln Glu Gln Gly Ser Tyr Val Gly Glu Val Val Arg Ala Met  
 65 70 75 80

Asp Lys Lys Lys Val Leu Val Lys Val His Pro Glu Gly Lys Phe Val  
 85 90 95

Val Asp Val Asp Lys Asn Ile Asp Ile Asn Asp Val Thr Pro Asn Cys  
 100 105 110

Arg Val Ala Leu Arg Asn Asp Ser Tyr Thr Leu His Lys Ile Leu Pro  
 115 120 125

Asn Lys Val Asp Pro Leu Val Ser Leu Met Met Val Glu Lys Val Pro  
 130 135 140

Asp Ser Thr Tyr Glu Met Ile Gly Gly Leu Asp Lys Gln Ile Lys Glu  
 145 150 155 160

Ile Lys Glu Val Ile Glu Leu Pro Val Lys His Pro Glu Leu Phe Glu  
 165 170 175

Ala Leu Gly Ile Ala Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro  
 180 185 190

Gly Thr Gly Lys Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp  
 195 200 205

Cys Thr Phe Ile Arg Val Ser Gly Ser Glu Leu Val Gln Lys Phe Ile  
 210 215 220

Gly Glu Gly Ala Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu  
 225 230 235 240

His Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser  
 245 250 255

Ser Arg Leu Glu Gly Gly Ser Gly Gly Asp Ser Glu Val Gln Arg Thr  
 260 265 270

Met Leu Glu Leu Leu Asn Gln Leu Asp Gly Phe Glu Ala Thr Lys Asn  
 275 280 285

Ile Lys Val Ile Met Ala Thr Asn Arg Ile Asp Ile Leu Asp Ser Ala  
 290 295 300

Leu Leu Arg Pro Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Pro Pro  
 305 310 315 320

Asn Glu Glu Ala Arg Leu Asp Ile Leu Lys Ile His Ser Arg Lys Met  
 325 330 335

Asn Leu Thr Arg Gly Ile Asn Leu Arg Lys Ile Ala Glu Leu Met Pro  
 340 345 350

Gly Ala Ser Gly Ala Glu Val Lys Gly Val Cys Thr Glu Ala Gly Met  
 355 360 365

Tyr Ala Leu Arg Glu Arg Arg Val His Val Thr Gln Glu Asp Phe Glu  
 370 375 380

Met Ala Val Ala Lys Val Met Gln Lys Asp Ser Glu Lys Asn Met Ser  
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Ile Lys Lys Leu Trp Lys  
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 gcgagggggt gcggcagtac tacctgcagc acatccacga cctgcagctc cagatccggc 180  
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Glu Gly Leu Arg Gln Tyr Tyr Leu Gln His Ile His Asp Leu Gln Leu  
35 40 45

Gln Ile Arg His Lys Thr His Asn Leu Asn Arg Leu Glu Ala Gln Arg  
50 55 60

Asn Asp Leu Asn Ser Arg Val Arg Met Leu Arg Glu Asp Xaa Xaa Leu  
65 70 75 80

Leu Xaa Glu Pro Gly Ser Tyr Val Gly Xaa Val Val Lys Ala Trp Gly  
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Asn Gln Arg Phe Trp Val Lys Val Asn Pro Glu Gly Lys Xaa Xaa Val  
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Asp Ile Asn  
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	atgggttcgtg aactatttgt gatggccana gagcatgcac catccataat ctttatggat	180
	gaaatagact ccattggatc tgctanaatg cagtcangat ctgggggtgg tgatagtgag	240
	gttcaacgca ctatgcttga tcttctgaat caacttgatg gctttgaagc atcaaacana	300
	attaaggtct tatggcgaca aatangatg atattttgga tcaagctctc tgangcctgg	360
	tcgcattgat aggaagatga atttccaatc cgaatgaaga tccgcttgat anttgaagat	420
	cattcaagaa aaatgactga tctggattgt ctgaaaagat gcagagaaat gatgggcnc	480
	ggacaaacta agngtctnac gaacaagatt tgcctccaaa naggtattca cagagatcta	540
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35 40 45

His Ala Pro Ser Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser  
50 55 60

Ala Xaa Met Gln Ser Xaa Ser Gly Gly Gly Asp Ser Glu Val Gln Arg  
65 70 75 80

Thr Met Leu Asp Leu Leu Asn Gln Leu Asp Gly Phe Glu Ala Ser Asn  
85 90 95

Xaa Ile Lys Val Xaa Met Ala Thr Asn Xaa Met Asp Ile Leu Asp Gln  
100 105 110

Ala Leu Xaa Xaa Pro Gly Arg Ile Asp Arg Lys Met Asn Phe  
115 120 125